

ment and fungoid filaments. These fungoid filaments would not be coaxed by any treatment into the development of fruit, and their nature, therefore, must still remain doubtful.

Our authors conclude that it is more reasonable to infer that localised spots in the tissues undergo a degenerative change into a substance peculiarly adapted to the development of filamentous growths, the origin of which, in situations where no spore could penetrate, must remain matter of perplexity.

M. J. BERKELEY

#### THE ADMINISTRATION OF PATENT LAWS IN ENGLAND

*Abstract of Reported Cases relating to Letters Patent for Inventions.* By T. M. Goodeve, M.A. Barrister-at-Law, and Lecturer on Applied Mechanics at the Royal School of Mines. (London: Henry Sweet, 1876.)

THE subject of the Patent Laws of this country which is now upon its trial, is one which largely affects the interests of scientific men in almost every branch of research, for in a great majority of cases a patent is the only channel through which the inventor of a good thing, which may confer inestimable benefits upon mankind, has any chance of being remunerated.

There is, at the present time, great diversity of opinion upon the question whether the Patent Laws should exist at all or be abolished, and there is also a diversity of opinion among men of science whether a scientific invention designed for scientific purposes ought to be patented, or freely given to the world. It is universally admitted, however, that some mode of rewarding the individual whose ingenuity and perseverance have enabled him to discover a new invention ought to be in existence; but, until some better system than that of patents is established the laws must be dealt with as they are. With regard to purely scientific inventions it is impossible to draw a hard and fast line between those useful alone to science and others upon which large commercial industries may be built. It often happens in the course of scientific research that an idea is struck upon, which, while aiding the immediate inquiry, is at the same time the solution of some great commercial problem, out of which fortunes may be made. The history of the science of Chemistry alone abounds with innumerable instances of the truth of this, and assuredly the original inventor ought to share in benefits derived from what could not have existed apart from his discovery.

The principle of patents is in itself good, because it provides that the reward of the inventor is regulated by and is proportionate to the utility of the thing invented, and to the amount of benefit derived from it by the community; and, at the same time, that reward is at the expense of that portion of the public who use the invention, and not, as in alternative schemes, at the cost of the public at large. The carrying of that principle into practice, however, is beset with so many difficulties, and the administration of the laws relating to it is so very defective, that a patent which is worth anything, can only be maintained at the cost of endless litigation, which often swamps all possible profits, and with a few exceptions lands the inventor in a large sum out of pocket.

Much of this would be saved if inventors had a more accurate knowledge of the Patent Laws, and knew something of the principles upon which they are administered in the tribunals of the land. Many a patent is taken out for an invention which is legally disqualified from being the subject-matter of a patent, and every day letters of patent are being granted for things which have been invented and patented over and over again. They are never refused on this ground, and the mischief is not discovered until the expenses of an action at law have been incurred.

Prof. Goodeve's work, though not a treatise on the Law of Patents, gives to the reader a remarkably clear insight into that law and its administration, by enabling him to understand the reasons which must guide a court or jury in their decisions upon patent cases.

From the vast medley of reported cases scattered throughout the archives of the Courts, the author has made a selection of abstracts chosen with great judgment on account of the characteristic nature of the principles involved, and, by the omission of all matter extraneous to those principles, has put forward the real points at issue in a very prominent and instructive manner. In each case the essential pleadings are given, and the inventions are described as nearly as possible in the language of the specification. The claims are stated, with the evidence adduced in their support at the trial, and both the direction of the judge and the finding of the jury are given in a clear and condensed form.

Many of the cases quoted in Prof. Goodeve's book involve points of high scientific interest; and, apart from its obvious value as a work of legal reference, it will be found to be a useful handbook to the inventor, and not without some considerable interest to the general scientific reader.

C. W. C.

#### LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*]

#### Sumner's Method at Sea

IN NATURE for August 24 you were good enough to review, in very favourable terms, Sir William Thomson's recently published book of tables for facilitating Sumner's Method of navigation. Since then you republished an attack on that method by the Astronomer Royal, which he made in the form of a letter to Prof. Stokes, after Sir William Thomson had communicated to the Royal Society the plan upon which his tables are based. Will you allow me, as one who took an active part in preparing Sir W. Thomson's book for publication, and who has had a good deal of practical experience of his method, to endeavour to reply shortly to the criticisms of the Astronomer Royal?

In publishing Sir G. B. Airy's letter, Prof. Stokes appended a note which was really a complete answer to the objections brought forward, and this was further enforced by remarks made by Sir W. Thomson in a second communication to the Royal Society (*Proc.*, June, 1871). As, however, the subject was but briefly treated in these communications, and the Astronomer Royal's letter has been republished at his own request, it may not perhaps be useless to go into the question in somewhat greater detail.

After stating the geometrical conditions under which the Sumner line, or *locus* of the ship's position is obtained from a single observation of altitude and time, the Astronomer Royal points out the very obvious truth that the accuracy of the position of the line depends on the accuracy with which Greenwich time can be

reckoned from the ship's chronometers; that the Sumner line will have been drawn east or west of its true position according as the chronometer is slow or fast. He then adds:—

"And the question now presents itself, which uncertainty is the greater—the uncertainty of latitude, which it is the real object of this problem to remedy? or the uncertainty of the chronometric longitude, which must be used in attempting to find the remedy? I do not doubt the reply of every practical navigator, that the chronometric longitude is far more uncertain than the latitude; and if it be so, the whole method falls to the ground."

Now this passage can only mean that Sumner's Method, while correcting one uncertainty which exists in the ordinary plan of working out rights, introduces another and a greater uncertainty, and so does more harm than good. Unless it means this, the question which uncertainty is the greater is completely beside the point. The statement, however, is wrong in both particulars. Sumner's Method does not remove uncertainty as to latitude, it only limits and defines that uncertainty to the extent which the data allow, and it introduces no new uncertainty whatever. Every other method of working out an observation of altitude and chronometer time gives results which are uncertain as to longitude for just the same reason and to just the same extent as are those given by Sumner.

The ordinary usage, for which Sir W. Thomson desires to substitute Sumner's Method, and with which he contrasts it in showing the superiority of the latter, is to estimate, by dead-reckoning or otherwise, the latitude, and then to compound this information with that derivable from the observation so as to obtain a knowledge of the longitude, and thus be able to say that the ship is at such and such a point. Now this operation is mathematically equivalent to drawing separately the Sumner line for the observation, and an east and west line through the estimated latitude, and then taking as the position of the ship the point in which these two lines meet. The result obtained is precisely the same in both cases, but the second plan has the great advantage that each piece of information is exhibited on the chart independently of the other, so that either may be made use of before the other is acquired. As Prof. Stokes says, "it is hard to suppose that the mere substitution of a graphical for a purely numerical process could lead a navigator to forget that he is dependent upon his chronometer."

That Sumner's Method supplies a means of exhibiting for each observation "*precisely what that observation gives, neither more nor less*" (to use Prof. Stokes' words), is its chief though not its only claim to adoption. The ordinary practice of navigators produces, indeed, results which have a greater show of precision, but the show is fallacious, for the data are not there to warrant it; in Prof. Huxley's forcible phrase, it is a grinding of wheat-flour from peascods. The question in a word is this: Shall we prefer the ordinary usage, which quietly ignores two causes of uncertainty, to a method which, while it necessarily leaves one of these still untouched, keeps the other constantly in view, and limits it as far as the case admits? J. A. EWING

#### Sea Fisheries and the British Association

PROF. NEWTON has kindly sent me a copy of his address to the Biological Section of the British Association at their recent meeting at Glasgow. It contains much interesting matter, and like the addresses delivered by others to the same body in former years, was no doubt listened to with the respect due to the scientific attainments of the author.

It is with very great regret, therefore, that I feel it necessary to dispute the accuracy of some of Prof. Newton's ideas, and to point out that my friend made a very important mistake when, towards the close of his address, he spoke of "the falling off in our sea fisheries," and of the Royal Commission of 1863, to which I was secretary, having been appointed "to seek a remedy for it." It was not ascertained then that there was any falling off in our sea fisheries, nor is such known to be the case at the present time. I say this advisedly, because Prof. Newton was evidently not speaking of unsuccessful fishing in any one year owing to that frequent cause of failure—bad weather—but of a general decrease in the supply of sea fish. The Royal Sea Fisheries Commission to which he refers, was appointed in 1863, in consequence of the clamour of the line fishermen of Sunderland and of the adjacent coasts against the North Sea trawlers, who, it was alleged, were doing their best to ruin the fisheries by the wholesale destruction of spawn and young fish: but who, it appeared, after full inquiry had been made by the Commission, had committed the great crime of landing large

quantities of fish in the local markets, and of underselling the local fishermen. The object of the gentleman who represented the complaints of the Sunderland fishermen to Parliament was specially to inquire into the effects of beam-trawling, and the Commission when at work was popularly known as the "Trawling Commission"; but the Government, finding a great deal of interest taken in the fisheries generally, thought it desirable to extend the inquiry into the state of all the sea fisheries around the United Kingdom, and it consequently became the most comprehensive investigation of the subject that had ever been made.

The following were the points the Commissioners were instructed to inquire into, as stated in the Commission:—

"1. Whether the supply of fish from the sea fisheries is increasing, stationary, or diminishing.

"2. Whether any of the methods of catching fish in use involves a wasteful destruction of fish or spawn, and, if so, whether it is probable that any legislative restriction upon such method of fishing would result in an increase in the supply of fish.

"3. Whether any existing legislative restrictions operate injuriously upon any of such fisheries."

The conclusion arrived at on the first point by the Commissioners—and I would call Prof. Newton's special attention to it—is thus stated in their report:—

"The total supply of fish obtained upon the coasts of the United Kingdom has not diminished of late years, but has increased; and it admits of further augmentation to an extent the limits of which are not indicated by any evidence we have been able to obtain."

It is desirable to call attention to the important fact that the above conclusion arrived at by the Commissioners was not based on newspaper reports—the common foundation of the frequent alarms about the sea fisheries—but on careful and laborious examination of the fishermen in their own towns and villages, of fishmongers, fishing boat builders, market and railway returns, and every kind of evidence that could be obtained which bore on the question of the supply of sea fish, and the condition of those persons who were dependent on it for their livelihood.

On the second point of the inquiry the conclusion was that any legislative restrictions on the methods of fishing would result in a decrease in the supply of fish.

And on the third point, the Commissioners stated that they found the existing regulations complicated, confused, and unsatisfactory; many regulations, even of late date, were never enforced; many would be extremely injurious to the interests of the fishermen and of the community if they were enforced; and with respect to these and others, the highest legal authorities were unable to decide where, and in what precise sense, they were operative.

As Prof. Newton started under the false impression that the Commissioners were appointed in order to seek some remedy for a falling off in our sea fisheries, it is not, perhaps, surprising that he did not clearly apprehend the meaning of their conclusions, although I should have thought that anyone reading them with ordinary care could hardly fail to do so. He says: "That Commission reported in effect that there was nothing to be done with our sea fisheries but to leave them alone." There is a despairing tone about this which would be very depressing if an examination of the Report did not result in showing that the Commissioners deprecated any interference with our sea fisheries for the simple reason that their produce was not falling off, but was increasing. They recommended, however, the removal of all vexatious and useless restrictions, and they advised a strict enforcement of such regulations as would prevent the interference in particular cases of one kind of fishing with another kind, and as would conduce generally to the maintenance of order on the fishing grounds.

Such are the facts of the case; and I cannot help thinking that if Prof. Newton had given a little more attention to the subject before he delivered his address to the British Association, he would scarcely have expressed himself in the terms in which he did on that occasion. Such statements and opinions from a person in his position, and addressed to a body like the British Association, can hardly fail to have considerable weight with those who heard or read about them; but more practical mischief is likely to result when they are repeated to the fishermen themselves, by keeping them in a continual state of apprehension lest the Government should interfere with their work. Such was the very general fear around the coast when the last Commission began its work, and one of my most difficult and constant duties in connection with the Commission was to satisfy the fishermen that the desire of the Government was to promote the success